

REMARKS

This communication is in response to the Advisory Action dated April 16, 2009 and the Final Office Action dated January 29, 2009. Applicant notes that the proposed amendments accompanying the after-final response were not entered.

Applicant has amended claims 1, 3-5, 7, 8, 11, 12, 15, 17, 18, 23, 25, 31, 39 and 40 by way of this communication. Applicant also added new claims 42-45. Claims 1, 3-5, 7-12, 15, 17-21, 23-33, and 39-45 are pending upon entry of this amendment. Reconsideration of the application in view of the following remarks is requested.

Claim Objections

Applicant has amended claim 31 in the manner suggested by the Examiner. Applicant therefore respectfully requests withdrawal of the objection to claim 31.

Applicant disagrees with the Examiner that claims 39 and 40 fail to set forth additional structural limitations and merely set forth a use of the system. However, to expedite prosecution, Applicant has amended claims 39 and 40 to clarify that the one or more components comprise one or more sensing components and one or more sense amplifiers, respectively. Therefore, Applicant respectfully requests withdrawal of the objection to claims 39 and 40.

Claim Rejections Under 35 U.S.C. § 112

In the Final Office Action, the Examiner rejected claims 39 and 40 under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner indicated that claims 39 and 40 lack antecedent basis for the term “the control unit.” Applicant has amended claims 39 and 40 to overcome this rejection. As such, Applicant respectfully submits that the Applicant withdraw the rejection under section 112 in view of the amendments.

Claim Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1, 3-5, 7-12, 15, 17-21, 23-33, 39, 40 and 41 under 35 U.S.C. § 103(a) as being unpatentable over Foster et al. (U.S. 6,925,328, hereinafter “Foster”). Applicant respectfully traverses the rejection. Foster fails to disclose the invention defined by Applicant’s currently amended claims, and provides no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

Applicant’s claim 1 is directed to a method of coordinating magnetic resonance imaging (MRI) with operation of an implantable medical device (IMD). Applicant’s claim 1, as amended, recites receiving, via wireless telemetry, a control signal prior to delivery of an electromagnetic radiation burst to a patient in whom the IMD is implanted and, responsive to receipt of the control signal by the IMD, blanking one or more components of the IMD for a time period including at least the delivery of the electromagnetic radiation burst to the patient. Foster fails to disclose the invention defined by Applicant’s currently amended claim 1, and provides no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

The MRI device of Foster does not send a control signal via wireless telemetry or otherwise communicate with the IMD prior to transmission of the RF coil pulses to coordinate operation of the IMD and the MRI device. In the advisory action, the Examiner characterized FIG. 5 of Foster as illustrating a control signal being sent to a pacemaker to disable part of its circuitry. Applicant is unsure as to what the Examiner is construing as the control signal in FIG. 5 of Foster. The activation of the gradient coils of the MRI scanner? The activation of a trigger voltage? The activation of the RF coil pulse? Regardless of which of these the Examiner is construing as the control signal, Foster still fails to teach or suggest the limitations of Applicant’s currently amended claim 1 since none of the actions described above constitute sending a control signal via wireless telemetry.

If the activation of the gradient coils of the MRI scanner or the activation of a trigger voltage are considered to be control signals, the IMD of Foster does not blank one or more components of the IMD in response to receipt of the control signal. As described

in FIG. 5 of Foster, these signals simply cause a parallel-resonant circuit to be formed. *Foster, col. 10, lines 15–25*. As such, the IMD does not blank one or more components in response to the “control signal,” as required by Applicant’s claim 1. To the contrary, the parallel resonant circuit does not function as an open switch to protect the circuitry until a signal at or near the resonant frequency is received, i.e., the RF pulses of the MRI. *Foster, col. 10, lines 26–52*.

If the RF coil pulse is considered to be the control signal, the IMD of Foster does not receive the control signal prior to delivery of an electromagnetic radiation burst to a patient in whom the IMD is implanted, as required by Applicant’s claim 1. Instead, the “control signal” is the electromagnetic radiation burst. In other words, the control signal and the electromagnetic radiation burst (which would be the same in this situation) are received concurrently. This is different than Applicant’s claim 1 in which the control signal is received prior to delivery of an electromagnetic radiation burst.

Applicant’s independent claim 11 is directed to an implantable medical device (IMD) comprising a receiver to receive, via wireless telemetry, a control signal produced by a magnetic resonance imaging (MRI) system prior to application of an MRI electromagnetic radiation burst and a control unit that in response to the control signal, blanks one or more components the IMD for a time period including at least the application of an MRI electromagnetic radiation burst delivered by the MRI system. Applicant’s independent claim 23 is directed to a system comprising a magnetic resonance imaging (MRI) device including a transmitter to transmit, via wireless telemetry, a control signal relating to application of an MRI electromagnetic radiation burst from the MRI device prior to application of the MRI electromagnetic radiation burst and an implantable medical device (IMD) including a receiver to receive, via wireless telemetry, the control signal produced by the MRI system prior to application of an MRI electromagnetic radiation burst and a control unit responsive to the control signal to blank one or more components of the IMD for a time period including at least the application of the MRI electromagnetic radiation burst. For at least the reasons described above with respect to claim 1, Foster fails to disclose the limitations of claims 11 and 23, and

provides no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

Moreover, Foster fails to disclose or suggest a number of the features set forth in Applicant's dependent claims. For example, with respect to new dependent claim 42, the limitation of which was originally part of claim 1, Foster fails to disclose or suggest blanking one or more components of the IMD for a time period beginning prior to and including delivery of the electromagnetic radiation burst to the patient. Instead, FIG. 5 of Foster describes a parallel resonant circuit that functions as an open switch in response to a signal at or near the resonant frequency of the circuit. *Foster, col. 10, lines 15–25*. In this manner, the parallel resonant circuit only functions as an open switch during actual application of the RF pulses by the MRI device, not **prior to** the delivery of the electromagnetic radiation bursts, as recited in Applicant's claim 1.

In response to the Applicant's argument, the Examiner indicated in the advisory action that "Foster does disclose that the activation of the RF pulses to the patient doesn't start at the same time that the control signal is sent but a time period afterwards and therefore, the system is capable of expanding the blanking period to include a few seconds before the RF pulses are applied to the patient." As described above, the parallel resonant circuit of Foster is not capable of operating as an open switch until the RF pulses are applied. As such, it is not possible to expand the blanking period as suggested by the Examiner to include a few seconds before the RF pulses are applied.

As another example, Applicant's dependent claim 25 recites that the system includes a programmer device and that the MRI device transmits the control signal to the programmer device and the receiver of the IMD receives the control signal from the programmer device. In the Final Office Action, the Examiner characterizes an operator who inputs the image sequence data into the MRI system controller is the programmer which disables portions of the IMD. Applicant disagrees with the Examiner's interpretation of this limitation. First, the programmer in Applicant's claim is a programmer device that communicates with the IMD, not an individual interacting with an MRI device. Second, even if the Examiner's characterization of the programmer as the operator of the MRI device is plausible, the operator does not receive the control

signal from the MRI device and send it the IMD. Instead, as described by the Examiner, the operator inputs the control signal into the MRI device and the MRI device sends the control signal to the IMD.

Foster also fails to teach or suggest the limitations of Applicant's independent claim 31, as amended, which recites a system comprising a programmer device defining timing for application of a magnetic resonance imaging (MRI) electromagnetic radiation burst and generating first and second signals indicative thereof, an MRI device responsive to the first signal and applying the electromagnetic radiation burst according to the timing indicated by the first signal and an implantable medical device (IMD) to receive the second signal from the programmer and blank one or more components of the IMD for a time period including at least the application of the MRI electromagnetic radiation burst. Foster does not describe a programming device that communicates with both the IMD and the MRI device.

For at least the reasons set forth above, the Examiner has failed to establish a prima facie case of unpatentability, as required by 35 U.S.C. § 103. Therefore, Applicant respectfully requests withdrawal of the rejection of claims 1, 3-5, 7-12, 15, 17-21, 23-33, 39, 40 and 41.

Conclusion

In view of the above, it is submitted that the application is in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Further, Applicant reserves the right to re-present any originally filed, cancelled, and/or previously unclaimed subject matter in a subsequently filed continuing application without prejudice or disclaimer.

Should any issues remain outstanding, the Examiner is urged to telephone the undersigned to expedite prosecution. The Commissioner is authorized to charge any deficiencies and credit any overpayments to Deposit Account No. 13-2546.

Respectfully submitted,

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